Developing Harmonised Measures of the Dynamics of Organisations and Work

Nathalie Greenan, Edward Lorenz

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10.1 INTRODUCTION

This chapter presents an overview of a set of guidelines for collecting and interpreting harmonised information on organisations and on processes of organisational change and innovation. The guidelines are the result of an EU Coordinating Action project, MEADOW, (Measuring the Dynamics of Organisations and Work) that involved 14 teams covering 9 European countries.[1] The guidelines have been designed to provide a framework within which existing European surveys could evolve towards comparability, as well as providing norms for the construction of new survey instruments in the field.[2] The starting point of the project was that reliable harmonised statistics on organisations and organisational change could make a significant contribution both to research and to policy initiatives at the EU and national levels.

There are a number of reasons why a deeper understanding of organisations and processes of organisational change are of research and policy relevance. First, as the discussion in the third edition of the Oslo Manual points out (Chapter 2), the full range of changes that effect firm performance and the accumulation of knowledge require a broader framework than technological product and process innovation and in particular should include organisational changes and innovations. In part, this widening of the concept of innovation to include organisational innovations reflects an appreciation that in many service sectors innovation is less technological in nature and takes the form of changes in the organisation of interactions between service providers and their clients.

Second, as developed in the literature on organisational design and performance, the capacity of firms to develop new products and processes is affected by their internal structure including the way work is organised. Forms of work organisation that stimulate interaction among agents with a diverse set of experiences and competences could be more creative, leading to the development of original ideas for new products and processes. Work organisational forms that delegate responsibility for problem solving to a wide range of employees could be more successful, both in upgrading the competences of workers and in transforming ideas into new products and processes.[3]

Third, organisational structure and changes have an impact on employee outcomes. Job stress is directly affected by the design of tasks and the way team work is structured. Job satisfaction depends in part on intrinsic rewards associated with the potential for work activity to offer opportunities for the creative use and further development of skills and knowledge. Thus policies focusing on improving the quality of working life can benefit from better information on how work is organised and how employees experience organisational change and innovation.

These different areas of research and policy relevance are reflected in two central features of the guidelines developed in the MEADOW project. The first, which concerns the scope of measurement, is that the guidelines develop definitions and concepts suitable for measuring both organisational change and prevailing organisational structures or states. Knowledge-based theories emphasise the way changes in the economic and institutional context require firms to be more adaptable and innovative than in the past. Dynamic or adaptive capabilities at the levels of technology, product development and markets often require complementary changes in organisational practices and methods, and for this reason there is great theoretical

interest in the extent and nature of organisational changes and their relation to economic fluctuation.

Capturing organisational states is of paramount importance for policy-makers and measures of organisational change that are not linked to measures of initial states can lead to mistaken policy evaluations by giving the impression of stagnation or inertia when in fact the relevant changes were implemented prior to the survey reference period. In the EU context many areas of policy-making, including employment, innovation and ICT policy, rely on the 'open-method of coordination' in which harmonised surveys are used to identify best-practice or sets of best practices as a basis for setting targets and for judging the progress of nations and regions in achieving them. Such targets can be quite general and can serve as basis for national or regional specific policies that take into account particular features of the local context. Adopting the kinds of organisational structures that promote greater flexibility in enterprises and employees is a general target of this nature and a harmonised survey measuring organisational structure and change could contribute to developing relevant indicators for benchmarking in this area.

The second central feature, which concerns the general survey framework, is that the proposed guidelines consider a survey which links the interview of an employer with the interviews of his or her employees as the richest survey setting for measuring organisational change and it economic and social impacts. From the research perspective, a linked survey can enrich information derived from one level with information from the other. For example, employer-level information provides useful contextualisation to the description of work provided by employees, whilst employee-level information can be used to compute indicators on topics that cannot be easily observed by an employer, such as the nature of intrinsic rewards or work-related stress. Developing a linked survey also allows choosing the most informed and relevant respondent for each topic of the survey. For example, an employer will be better informed about the organisation's strategy and overall structure while an employee can more easily describe his or her job characteristics, such as whether colleagues can provide assistance in carrying out a job. Developing both employer-level and employee-level measures can therefore bring about an improvement in the measurement strategy for each level, which can also feedback into conceptual considerations.

From the policy perspective linked surveys could provide useful indicators for policy-making that cannot be constructed with single-level survey instruments. For example, adding an employee questionnaire to an employer-level survey providing measures of innovation performance would allow scoring the share of employees with innovative behaviour or specific further training and computing this score in the population of innovative employers and non innovative employers across European countries. Linked surveys could also be used in monitoring the impact of labour market or industrial government intervention. An example is active ageing which is moving up on the policy agenda. Analysis based on linked surveys of organisations could contribute to identifying the flexible working arrangements, the types of further training or the job design characteristics that are best suited to maintain older workers in employment. The effect of employer incentives to keep older workers in employment could also be assessed using the temporal and spatial variation in policies across European countries.

A linked employer-employee survey adds complexity to the practical side of data collection. It may increase costs if it requires adding a new survey to an already existing employer or employee survey. It also requires that the two survey levels are coordinated. In terms of the choice of primary sampling unit (PSU), the most common strategy in existing linked surveys is to take the employer as the PSU. However, it is also possible first to sample and interview the employees and to then derive the interviewed sample of employers in a second stage. These two different ways of linking are not equivalent and in Section 10.3

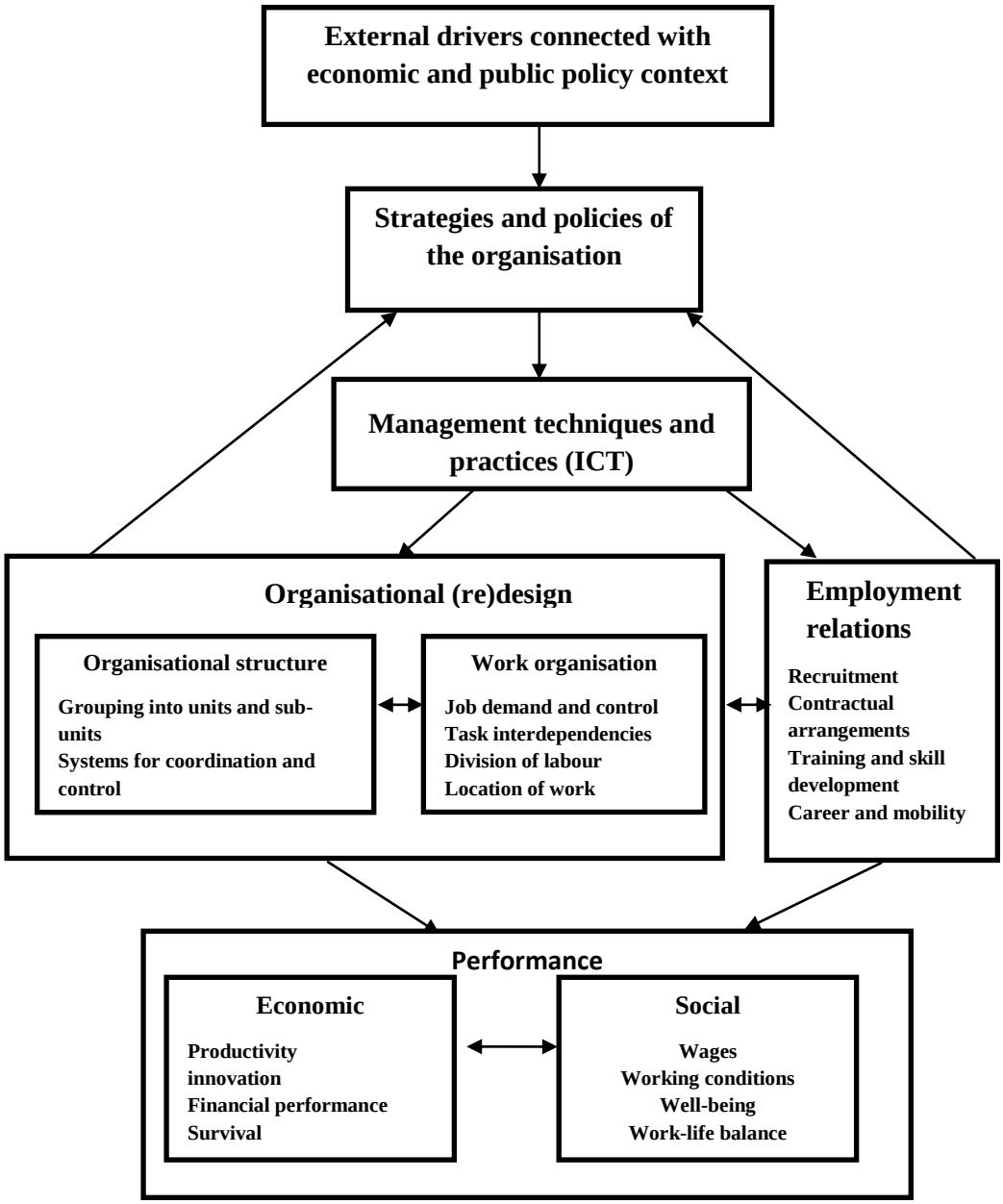
below the advantages and disadvantages of each linking method are considered. Section 10.3 also considers the advantages and disadvantages of a panel and retrospective questions for capturing processes of change. Before discussing these aspects of the survey design, Section 10.2 presents the measurement framework developed in the MEADOW project for characterising organisational change and its economic and social impacts. The framework draws on the major theories of organisational structure and change and it identifies key organisational elements, their determinants, and the relations between the elements in order to provide guidance on the choice of indicators of organisational change. Section 10.4 provides more detail on the choice of indicators and discusses the employer and employee-level questionnaires that were developed in order to measure organisations, their evolution and their impacts. As there is insufficient space here to present the entire questionnaires, the emphasis in Section 10.4 is on the complementary nature of the employer and employee survey questions designed to measure organisational design and its change.

The Meadow project included a phase of cognitive testing of the employer and employee survey questionnaires in order to assure that the questions are understood in the same way by respondents from different linguistic and cultural areas, working in different sectors, and employed by firms or organisations of vastly different sizes.[4] The project did not involve full-scale tests of the survey instruments. A first large-scale test of the employer-level survey instrument was undertaken independently by Statistics Sweden in 2010[5]. Key results of the Swedish employer-level survey are presented in Section 10.5.

10.2 THE ORGANIZATIONAL MEASUREMENT FRAMEWORK

Figure 10.1 below presents the basic measurement framework adopted in the MEADOW guidelines. The measurement framework draws inspiration from an overview of the major theories of organisational structure and change,[6] as well as a background report on the state of the art in surveys of organisational change.[7]

Figure 10.1 Basic measurement framework



The framework does not reflect a particular theory of organisational structure and change. Rather, its purpose is to recognise the key elements and relations between elements that are identified in the major theories in order to provide guidance for the choice of indicators. Ideally the results of a survey measuring the different indicators would allow researchers to test propositions associated with different and possibly competing theories of organisational

structure and change. An important proviso is that it is recognised that there are clear limitations to what can be reliably measured with surveys. It is very difficult to measure unplanned incremental changes in work and interactions that often even go unrecognised by the actors directly involved. Thus for the purposes of the measurement framework organisational change is defined to include intended changes in the organisational structure and the organisation of work.

The framework draws attention to the driving forces behind organizational change. Key aspects of the external environment that affect the internal policies of enterprises include those connected to global competition and technology as well as changes in public policies, notably in the areas of labor markets, systems of education and training, health and safety, and the environment. Organisational change surveys can provide some information on these contextual factors but it will necessarily be limited to the perceptions of respondents concerning how these external economic or institutional factors are experienced.

The strategies and policies of the organisation affect the specific management practices and techniques adopted. One area that is especially important to the objectives of EU employment policy is the adoption of practices designed to increase organisational flexibility and adaptability. Flexibility has external and internal dimensions. Organisational practices and techniques that increase internal flexibility include job rotation, multi-skilling and the set of 'lean' production methods designed to minimise inventories and allow the customer to pull value from the producer (Womack and Jones, 2003). ICT tools such as performance tracking software and client relationship software may contribute to increased flexibility and performance. Another policy relevant area is practices and techniques designed to improve product quality. Total quality management (TQM) refers to a set of techniques for monitoring and improving product quality including the use of quality circles and delegating responsibility for quality control to the individual employee. A third area is knowledge management practices, including the use of data bases documenting good working practices or the monitoring of external ideas and technical developments.

Downward pointing arrows indicate that the practices and techniques adopted affect the design of the organisation and its employment relations. Organisational design is seen as being composed of the organisational structure and the organisation of work. Organisational structure refers to the grouping of people, tasks and objects (like equipment or buildings) into sub-units and divisions and the systems to ensure coordination and control both horizontally and vertically within the boundaries of the organisation and outside these boundaries, with suppliers, customers and other business partners. The coordination mechanisms including relations of authority and control are central to how the management governs and changes the organisation, and to how employees experience their working conditions and possibilities for personal development.

Work organisation refers to how work is actually divided into tasks, the bundling of tasks into jobs and assignments, the interdependencies between workers in performing the job, the job demands, and the degree of control over the work done. As the arrow linking the organisational structure and the organisation of work suggests, these two components of the organisational design are closely related. In organisations relying on relatively decentralised control mechanisms employees will tend to exercise greater control over their work activity and job descriptions will tend to be broader, incorporating multiple tasks.

The research literature shows that key elements of the organisation can be combined in various ways, leading to different types of organisational designs and related outcomes. A common theme in the contemporary literature is the move from bureaucratic and/or authoritarian types to more organic and flexible organisations. An example is the concept of an 'adhocracy' (Mintzberg 1979). This type is characterised by specialists deployed in project teams, much training, little formalisation and coordination by mutual adjustment. While the

MEADOW project placed emphasis on developing indicators for organic or flexible organisations it was also recognised that many organisations are characterised by bureaucratic dimensions and that it is a common feature to combine both bureaucratic and non-bureaucratic structural features in the same organisation.

The measurement framework includes an arrow connecting the organisational design to employment relations. While employment relations are not defined as components of the organisation's structure *per se*, a vast literature shows that both economic and social performance are affected not only by the organisational design but also by the system of employment relations. Employment relations include such elements as recruitment practices, contractual arrangements, training and competence development, and career paths and internal mobility. The literature on human resource management (HRM) argues that employment relations are highly complementary to the organisation of work and that they have an impact on job quality and hence on work-related stress and job satisfaction. A recent strand of literature has focused on identifying the positive performance effects of combining specific sets of HRM practices with managerial practices designed to enhance employee discretion and more fully involve employees in problem-solving activities. In the organisational behaviour literature, this issue is conceptualised as one of HRM complementarities (Ichniowski, Shaw and Prennushi, 1997; Laursen and Mahnke, 2001; Lorenz et al. 2004; Michie and Sheehan, 1999).

The measurement framework shows that the organisational design in combination with various elements of the employment relations affect both economic and social performance. The framework includes an arrow connecting economic performance to social performance. The reasons for this are to some extent implicit in the literature on HRM complementarities which points to the way worker well-being including intrinsic rewards, impact on employee morale and commitment to the organisation's goals with further effects on productivity. The stability of employment tenures and career prospects within the organisation will affect an employee's interest in investing in firm-specific skills which in turn will affect the ability of the employee to contribute to making improvements to the quality of products and processes.

There is a growing focus on how to reform public sector organisations so that they become more market oriented, assuming that this leads to more efficiency in terms of serving the needs of citizens, customers and clients at low costs. This is related to the modernisation agenda in the public sector, influenced by New Public Management (NPM) which advocates performance measures for the efficient use of resources and personnel in public sector organisations comparable to those in the private sector and by the implementation of E-government schemes. The common objectives of many management practices means that many of the core elements and interrelations identified in the measurement framework apply to both private and public sector organisations and are relevant for constructing common indicators for the entire economy and this is the approach taken in the MEADOW project.

At the same time, organisations in the public sector are exposed to transformation pressures emanating from the political system, as well as to pressures from the changing demands of citizens around such issues as access to education and training and work-life balance. Further, while reforms based on the new public management have seen the introduction of private sector type performance measures into the public sector, there are dimensions of performance with no obvious private-sector counterparts. These include the scientific output of public research organisations, the level and quality of education and training, and the quality and level of coverage of healthcare. Public administration may also be evaluated on the criteria of transparency and justice as related to democratic principles. Transparency laws are thus seen as means of increasing public trust in government and the optimistic view is that they will produce a culture of openness in public organisations. The

MEADOW survey does not develop measures for these features of public sector organisations and they could be the focus of specialised modules.

10.3 ELEMENTS OF A GENERAL SURVEY FRAMEWORK

10.3.1 Linked employer/employee surveys

Although the MEADOW employer and employee surveys were designed so that they can be administered independently, as discussed above there are a number of reasons for preferring a linked survey for measuring the different elements and interrelations summarised in the measurement framework. There are two possible methods for administering such surveys that are not equivalent in terms of advantages and drawbacks. The employer can be sampled first, while the employee is sampled later in a second stage (linked employer/employee survey). Or, the opposite procedure may be adopted, with the employee sampled and interviewed first, and the interviewed sample of employers being derived from this employee sample (linked employee/employer survey).

Amongst existing linked survey instruments, the most common practice is for the employer to be designated as the primary sampling unit. One reason for doing this is that it seems obvious to explore the employer-level first in a survey focusing on organisational change, as it can be assumed that changes are more often initiated at the employer level than the employee level. Further, it is reasonable to begin by interviewing persons both in a position to have an understanding of the organisation as a whole and to impart this information. There are also a number of more practical advantages to this approach. First, taking the employer as the primary sampling unit (PSU) makes it easier to survey the various employees who are linked to it. A clustered sample is obtained, which is both simpler and cheaper to administer than a simple random sample, as fewer contacts are needed overall. Second, in the absence of linked employer/employee registers, the unit that is sampled first will be easier to follow-up in the case of a longitudinal survey. Consequently, if employees are the PSU it will be more difficult to obtain a panel of employer units. Third, the representativeness of the sample of employers should be easier to guarantee in a setting where the employer is the PSU since the dispersion of sampling rates is always higher within the sample for the second-stage.[8]

Taking the employer as the PSU may, however, result in several practical difficulties. One problem is that it may result in a bias in the employee sample towards employees who are more satisfied with their employer or their work (social climate bias), if they are selected from a list given by the employer. Thus, even if employees are randomly selected from this list, it will be practically much more difficult to obtain a random sample of employees because the employers provide the sampling frame for the employee survey within their units.

From the EU perspective, a main difficulty with the employer first approach is the absence of a harmonised employer register. At the European level, no exhaustive and up-to-date database is available that includes: addresses of employer units (headquarters, subsidiaries, etc.); a classification of industries such as the NACE; and more generally the information that is required to stratify and optimise sampling rates. In practice existing harmonised employer surveys cope with this constraint in two quite different ways in. One approach is centrally coordinated with a single organisation developing and translating a questionnaire, prescribing the survey methodology, and contracting out the fieldwork to a network of contractors. The European Foundation for the Improvement of Living and Working Conditions (EFILWC) plays this role in the case of the European Company Survey (ECS) [9]. .

The Community Innovation Survey (CIS) and the European Structure of Earnings Survey (ESES) illustrate a decentralised mode. These surveys are covered by European regulations

that require each member state to participate. Eurostat is responsible for coordination and quality issues and, in close cooperation with EU Member States, develops a standard core questionnaire in English and an accompanying set of definitions and methodological recommendations. The responsibility for the implementing the survey at the national level lies in most cases with the national statistical office.

With respect to the MEADOW framework, the ESES is of particular interest as it is the only harmonised European linked employer/employee survey. This survey has been carried out in 1995, 2002 and 2006 and has been progressively extended to all 27 Member States of the European Union. A central feature of ESES is flexibility: information can be obtained from "tailor-made" questionnaires, existing surveys, administrative data, or from a combination of these sources. In some countries, participating organisations provide general information about their wage policy and then assemble information from their own files about the individual earnings of a sample of employees or, in some cases, their whole workforce. In other countries, employer-provided information about wage policies is enriched by administrative data on the earnings of all employees working for the participating employer units. Some countries, such as France, survey a random sample of establishments and a random sample of employees within these establishments using a linked employer/employee register.

While the cross national experience of carrying out several waves of the ESES provides an important knowledge-based for implementing a MEADOW style organisational survey, its flexible approach has some drawbacks as it creates certain barriers to comparability (Desai, 2008). At the most basic level, the definition of the survey unit can be variable. Thus European-wide results obtained from the data sometimes fall below the standards applied at a national level due to differences in the units of observation, sampling frames and classifications. The consequences of these differences are difficult to assess, since much of the knowledge about them remains tacit, and is related to the routines and practices of national statistical offices in each country. However, Eurostat's coordination of the survey promotes further convergence in these practices and progressively improves the documentation of cross-country differences through a series of quality reports (Eurostat Unit F2, 2006, 2009).

An advantage of taking the employee as the PSU is that in contrast to the situation in respect of employer databases good quality household databases can be obtained in most European countries through the National Statistical Offices or other national institutions.[10] Moreover, taking the employee as the PSU allows one to cover a very large field of employers (all kind of establishments, in all sectors, as well as the self-employed) in a way that does not depend upon the availability of a business register and the extent to which it is up-to-date. The sample of employers derived from a random sample of employees will be automatically proportionate to the size of employer units. The sample will reflect the employer unit's share in total employment and can be easily weighted to make it representative of the population of organisations (Leombruni, 2003).

When consideration is given to using the MEADOW framework for surveys conducted outside the EU in developing or emerging market economies, a further factor that may favour an employee first approach is the existence of a large informal sector. Even where there are up-to-date business registers they are unlikely to include units in the informal sector. This limitation of business registers explains the trend in recent years to survey the informal sector through mixed-household enterprise surveys in which a survey of households is used in a first phase to identify owners and then in a second phase a sample of enterprise-owners is interviewed to gain information on their operations.[11]

The employee-first option may lead however to some specific difficulties. There is the risk of attrition and bias because of the refusal or inability of some employees to provide good contact information about their employer. There is also the fact that the distribution of

businesses in terms of size is skewed and thus it is difficult to reach very large employer units for which a census is generally conducted in employer level surveys such as CIS. Other drawbacks are simply the counterparts of the advantages of an employer-first approach, namely: the representativeness of the employer sample; difficulties in following up employers over time; and budget optimisation.

Although both linking options face limitations, either could provide linked data of good quality. Besides the methodological issues emphasised above, practical issues such as sampling database availability, and legal constraints regarding the access rights for individual data will necessarily play a role in the choice of survey design. While the ability of employers to provide relevant information on the overall structure and strategy of the organisation constitutes a strong argument in favour of an employer first approach for a survey focusing on organisational change, problems related to the lack of availability or poor quality of registers of employers makes it nonetheless worth considering the alternative of a linked employee/employer survey.

10.3.2 The longitudinal aspect: a combination of retrospective questions and a panel

The first section of this chapter discussed the importance of measuring organisational states and their relation to knowledge development and performance. Measuring changes without measuring states can result in pooling together employer units which remain inert and units which have undergone major changes in previous periods. But changes in the organisation also need to be identified. Measuring the dynamics of change at the employer level is central in order to make some assessment of organisational flexibility and adaptation. It is also important in order to identify the adjustment costs of change, including training needs, renewal of the labour force, accidents, and perception of work intensification and stress. To understand barriers to the diffusion of organisational forms that appear to be virtuous in terms of performance requires collecting information on how firms are adopting and absorbing changes.

Retrospective questions and a panel considered as alternatives methods for capturing the dynamics of organisations have advantages and drawbacks. Whereas a panel by definition consists of measurements at two or more points in time (e.g. over a time period of several years), the immediate availability of retrospective data is an argument in favour its use. Moreover, a sole reliance on retrospective questions removes the requirement for repeated surveys and is therefore cheaper. Another factor favouring the use of retrospective questions is the possibility of focusing on the most recent organisational innovations in a manner that cannot be done with a panel. With retrospective questions, after having described features of the organisation and its use of managerial practices at two dates, it is possible to ask the respondent to focus on the major change which occurred during that period and to describe the difficulties encountered. This cannot be done in a panel design which only seeks to measure states, at least when organisational innovation takes place between panel measurements.

Another advantage - albeit one which only concerns the employer-level - is that retrospective questions can provide more consistent and comparable information on activities carried out by organisations and workers, because an individual provides all of the information at a single point in time. Thus, there is no bias linked to a change of respondent between two different waves, as can occur in an employer-focused panel survey, and changes in the general context in which the organisation operates are not likely to influence the interpretation of a given question.

Counterbalancing these advantages are certain drawbacks of using retrospective questions. One is that if organisational changes lead to mobility and turnover among management, the

respondent may not have experienced the change and may have only limited or no knowledge of it. Thus, if retrospective questions may serve to limit some biases in the measurement of change, the *quid pro quo* is that information may be missing or incomplete. Another principal drawback is the risk of 'recall error': memories may be short leading to omission, or unauthentic leading to a 'telescoping effect', in which respondents report things in the current period that actually took place in a prior period (especially when people are dealing with daily problems and plan for the future).[12]

In this respect, one obvious advantage of a panel design is that it does not rely upon memories. However, panels can only measure changes that can be consistently defined over time, and there is then a significant emphasis on fixing the content of the questionnaire at wave one. This poses a problem for a survey on organisational change, as it is likely that a fraction of the survey will have to evolve over time. For example, management practices follow fads (Abrahamson and Fairchild, 1999) and from one wave to the next some practices may become obsolete while others may evolve during their diffusion process. Using two waves of the WERS survey, Freitas (2008) investigated employers' use of "quality circles" and "Business Process reengineering" through measures based on questions that are identically formulated in 1990 and 1998. She finds that the patterns of use of these practices have changed over time. An explanation is that these practices refer to management concepts that are soft rather than precisely defined and which are constantly recycled as they diffuse, in relation to changes in the social and competitive environment. Thus a longitudinal survey of these practices calls for a renewal of some questions from one survey to the other, even if they relate to the same management concept. This points to the need for qualitative investigation in preparing survey questionnaires, along with an analysis of management publications, in order to monitor the evolution and renewal of management concepts.

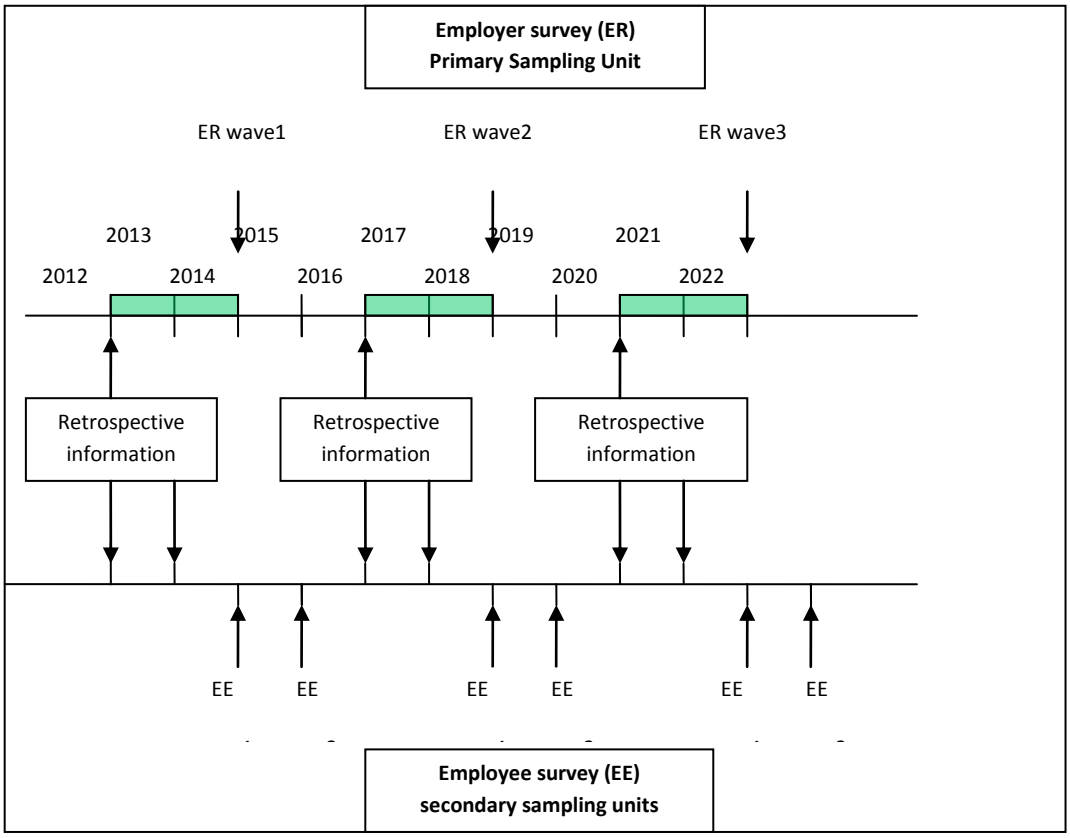
Another argument in favour of panel surveys is the possibility of analysing changes not only within the organisation, but also between them (and especially between the older ones and those more recently established). Of course, this implies that employers from previous waves are followed up while the panel is refreshed with new employers, some of these being newly created organisations. Indeed, such data should enable one to observe the demographics of organisations and thus to estimate the effects of the structural transformation of the economy on the dynamics of organisations and work. Here again there is a drawback as it is expensive and time-consuming to trace employers, employees or both. Even with adequate resources and appropriate procedures, there will be some attrition, which means that a part of the initial sample is lost in each of the following waves since some particular companies, workplaces or employees prefer to stop participating in the panel after a while.[13] Another point is that the initial sample has to be large enough to cope with any attrition, both in aggregate and within each stratum. So the initial sampling is more complex in a panel. The refreshment strategy, taking into account birth, death and attrition, is another important issue and attention has to be given to the computation of dynamic weights.

A strategy to derive benefits from the advantages of each option and to limit the associated disadvantages is to combine the use of retrospective questions and a panel design. An advantage of using a combined approach is that data from the first wave are available quickly to analyse the dynamics of organisations and work in the recent past. Then, repetition of the survey in a second wave makes it possible to monitor trends in change and to undertake longitudinal analyses that can investigate the causality of relationships. Asking retrospective questions in a subsequent wave fills the gaps in the longer timeline and provides useful, additional information.

Figure 10.2[Confirm] below represents a combined approach consisting of a four-year follow-up period between the employer survey waves combined with the use of retrospective questions, which have a (maximum) recall-period of two years.[14] This would be adequate for

measuring the organisation of work, which may change quickly but also needs time to show its effects. With a four-year cycle, two waves of the survey provide four distinct time points, each separated by a two-year period.

Figure 10.2 A proposed survey design [Elgar is black and white. Could the green become grey?]



In this survey design, information on changes over periods of two years might not be fully comparable from one period to the other. For example, changes between 2012 and 2014 are assessed through retrospective questions addressed to a unique respondent while changes between 2014 and 2016 are based on the comparison between a state variable given by one respondent describing the situation at the date of the survey in wave 1 and a state variable given by another respondent in wave 2 and deriving from a retrospective question. The comparability of these two different measures of change over a time period of two years would need further assessment. The figure indicates that a one-year follow up for the employee survey could be considered, leading to a two-wave employee panel. This design makes it possible to analyse short-term effects at the employee-level using the panel dimension of the data.

10.4 METRICS FOR MEASURING ORGANIZATIONAL DESIGN AND ITS CHANGE

A central theme in this chapter has been the advantage of a linked survey framework for measuring organisations and their dynamics. This relates to the fact that information gathered at one level can be enriched from information at the other level. Employers, for example, are better placed than employees to answer question about the overall structure of the organisation, while employees are better placed to describe the characteristics of their daily

work activity and how they interact with other employees. In order to illustrate the complementary nature of the information that can be collected at the employer and employee levels, this section presents selected questions from the MEADOW employer and employee surveys designed to measure organisational design and its change.[15]

Box 1 lists questions from the employer-level questionnaire. As discussed in section 2 above, there is an important literature looking at the relation between performance outcomes and the design of the organisation, including the types of coordination mechanism used. An important theme in this literature has been the move from bureaucratic or hierarchical organisational structures to more decentralised ones in which elements of decision making authority are delegated to employees at lower levels of the organisational hierarchy. Such decentralised organisation structures are seen as being more flexible or adaptable and hence better adapted to competing in global markets often characterised by rapid technological change.

While it is difficult to measure directly at the employer-level the use of different coordinating mechanism, much can be learned by asking questions about the divisional structure of the organisation, the use of teamwork and by identifying the category of personnel responsible for different types of decision-making and activities.

BOX 10.1 EMPLOYER-LEVEL QUESTIONS FOR ORGANIZATIONAL STRUCTURE AND INTERNAL COORDINATION

B1HIE How many organisational levels are there in your establishment, including the highest level (for example, senior management) and the lowest level (for example, production staff)?

Number _____

B1HIE2007 How many organisational levels were there 2 years ago?

Number _____

B1DIVTYPE Does this establishment have each of the following types of divisions or departments?
[Provide separate 'yes or no' response options to each of questions a to c]

a. Separate divisions or departments by function: sales, production, administration, research, etc.
b. Separate divisions or departments by type of product or service
c. Separate divisions or departments by geographical area: sales regions, etc.

1. Yes
2. No

B1NDIV How many separate departments or divisions report directly to the head of this establishment?
Number: _____

B1STRUCT Who normally decides on the planning and execution of the daily work tasks of your non-managerial employees?

1. The employee undertaking the tasks
2. Managers or work supervisors
3. Both employees and managers or supervisors

B1DLGQLT Are each of the following responsible for quality control?
[Provide separate 'yes or no' response options to each of questions a to e]
a. The employee undertaking the tasks
b. Managers or work supervisors
c. Specialist group or division within the enterprise or organisation
d. External groups – customers, external evaluation experts, etc.
e. [only ask if responses to a to d all 'no'] Quality control not relevant to this establishment

1. Yes
2. No

B1TEAM Are any of the employees at this establishment currently working in a team, where the members jointly decide how work is done?
1. Yes
2. No

B1TEAMPER What percentage of the employees at this establishment currently works in such teams?
1. Up to 24%
2. 25% to 49%
3. 50% to 74%
4. 75% or more

B1TEAM2007 Did any of your employees work in such a team two years ago?
1. Yes
2. No

B1TEAM CHG Compared with two years ago, has the percentage of employees currently working in such teams:
1. Increased?
2. Decreased?
3. Remained approximately the same?

B1DLGSCHD Can any of the non-managerial employees at this establishment choose when they begin or finish their daily work, according to their personal requirements?
1. Yes
2. No

B1DLGSCHDPER What percentage of the <u>non-managerial</u> employees at this establishment can currently choose when they begin or finish their daily work?
1. Up to 24%
2. 25% to 49%
3. 50% to 74%
4. 75% or more

B1DLGSCHD2007 Could any of the non-managerial employees at this establishment choose when to begin or finish their daily work two years ago?
1. Yes
2. No

As the literature on 'learning organisations' has argued, an objective in delegating decision-making authority and increasing the control employees' exercise over their jobs is to foster employee learning and creativity. Much of this literature argues that in hierarchical structures crucial elements of the organisation's knowledge base that could contribute to improved performance, including innovative performance, remain untapped (Senge, 2000; Garvin, 2003; Jensen et al. 2007; Greenan and Lorenz, 2010). Employers are poorly placed to provide detailed information on what employees do and learn in work, and Box 2 below presents questions from the employee questionnaire designed to capture such aspects as how

much learning and problem-solving takes place on the job and the extent to which employees are able to choose or change the way they undertake their jobs. Employee-level questions can also be used to provide direct measures of the types of coordinating mechanisms used in the organisation. In particular it is possible to ask employees about the factors that determine their pace of work: one's boss or supervisor, the automatic movement of equipment, or the requirement to respect quantitative production target. Questions about the forms of assistance employees receive or give in work can be used to measure the importance of more informal methods of coordination, or what Mintzberg (1979) calls 'mutual adjustment'.

BOX 10.2 EMPLOYEE-LEVEL QUESTIONS FOR COORDINATION AND WORK ORGANIZATION

Work organisation and task description

BWRKGROUP In performing your tasks, do you ever work together in a permanent or temporary team? *(Interviewer note: People could be from your firm [organisation] or from another firm [organisation].)*

1. Yes
2. No
8. Don't know
9. Refused

BWRKGROUPb Does this team have a team leader?

1. Yes
2. No
8. Don't know
9. Refused

BWRKGROUPe Excluding the team leader, can the others in this team influence what tasks you do yourself?

1. Yes
2. No
8. Don't know
9. Refused

CAUTC In your job, what proportion of the time can you choose or change the content of your work tasks?

1. Less than 25% of the time
2. 25% up to 50% of the time
3. 50% up to 75% of the time
4. 75% or more of the time
8. Don't know
9. Refused

CAUTH What proportion of the time can you choose or change how you undertake tasks?

1. Less than 25% of the time
2. 25% up to 50% of the time
3. 50% up to 75% of the time
4. 75% or more of the time
8. Don't know
9. Refused

DLRNNEW How often does your job involve learning new things?

1. Every day
2. At least once a week
3. At least once a month
4. Less often than once a month / never
8. Don't know
9. Refused

DPROBSOLVE In your work, are you ever confronted with new or complex problems that take at least 30 minutes to find a good solution? Only consider the time needed to THINK of a solution, not the time needed to carry it out.

1. Yes
2. No
8. Don't know
9. Refused

Internal coordination

BWORKPRES Are any of the following important in determining the pace of your work: [Rotate order of questions randomly]

a. Clients or customers
b. Supervisor or manager
c. Your co-workers
d. Your own discretion
e. Pay incentives
f. A computer or computer system
g. A machine or assembly line
h. Targets you have been set

BQUALMON Thinking of your job as a whole, who usually monitors the quality of your work? You may answer yes to one or more of the following:

a. You yourself
b. Your supervisor or manager
c. The team you work with most often [Ask if BWRKGROUP=1]
d. A person from a separate department
e. Customers or clients

BWRKASSIS Sometimes people want to get assistance with a work overload or difficult situation. Do you ever feel the need for assistance?

1. Yes
2. No
8. Don't Know
9. Refused

BWRKASSISa In these situations, how often do you receive assistance from your supervisor or manager?

1. Always
2. Sometimes
3. Never
7. Not applicable
8. Don't Know

BWRKASSISb In these situations, do you receive assistance from other co-workers?

1. Always
2. Sometimes
3. Never
8. Don't Know
9. Refused

10.5 RESULTS FROM THE SWEDISH EMPLOYER SURVEY

The first full-scale test of the MEADOW employer survey was conducted by Statistics Sweden under the coordination of Hans-Olof Hagén in 2010. The Swedish MEADOW survey was administered at the company rather than the establishment level, with no employee-level counterpart, which is one of the possible implementation options of the Guidelines. As a matter of fact, this survey is inscribed in the prolongation of a previous company-level survey, the Flex survey, conducted in 1995 and 1997, which focused on measuring work organisation and learning. In 1997, the flex survey was matched with a linked employer employee register which brought about some additional information for the purpose of secondary analysis. This linking option was retained for the Swedish MEADOW survey and it could be used in future waves for developing a linked employer-employee survey. However, in the 2009 edition, another option has been explored: that of a positive coordination with the sampling frames of the Community Innovation Survey (CIS) and the Information and Communication Technology use survey (ICT use), two harmonised surveys coordinated by Eurostat. The MEADOW employer questionnaire was thus sent to the 1400 firms with over 15 employees that participated in both of these surveys in 2009.

Even though the Meadow survey was voluntary in Sweden, it more than achieved the 60% target response rate recommended in the MEADOW Guidelines: 64%. Some possible reasons for this relatively high response rate in a voluntary survey are the use of register data and the piggy-backing on the CIS and ICT survey which limited the time of the interviews to 15-20 minutes. The availability of additional information from these databases allowed an in-depth analysis of the non response showing that there are no large differences in productivity, innovation and ICT use for the non responding group of firms compared to the responding group, which confirms the quality of the data.

The main results of the survey have been published in a collective volume titled *Learning organisations matters* (Statistics Sweden, 2011). Here, selected results are summarized to show how the information from a MEADOW employer survey can be used to characterise learning forms of organisation. Learning organisations are those that are able to adapt and compete through learning. Most of the research sees the learning organisation as a multi-level concept and defines learning organisations in terms of the inter-relations between managerial practices, team organisation and individual behaviour. Three composite indices were constructed from the survey results in order to capture key characteristics of learning organisations: *decentralisation*, *individual learning* and *structural learning*. They are based on questions about the way the firm operates at the date of the survey, in 2009. Each index sums up a varying number of questions with different item response in a standardised way so that it takes values between 0 and 1.

The *decentralisation* index is based on five of the questions on organisational structure and coordination displayed in box 1: B1HIE on the number of hierarchical layers, B1STRUCT on the planning of daily tasks, B1DLGQLT on quality monitoring, B1TEAMPER on the proportion of employees working in autonomous teams and B1DLGSCHDPER on the

flexibility of hours worked per day. An index close to 1 indicates a high level of decentralisation for operational decisions, structured around autonomous teams.

Box 3 presents the questions related to *individual learning*. This index tries to capture the importance of continuous learning at the individual level. It includes both formal and informal learning activities. Two questions in this list are specific to the Swedish Meadow survey: the one on competence development and the one non-paid time-off the job for training purposes.

BOX 10.3 EMPLOYER-LEVEL QUESTIONS FOR *INDIVIDUAL LEARNING*

Is competence development part of the normal every day work?

1. Yes
2. No

CTRNONPC What proportion of employees have received on the job training over the past 12 months?

1. Up to 24%
2. 25% to 49%
3. 50% to 74%
4. 75% or more

CAPPPC Approximately what proportion of your employees has a performance appraisal or evaluation interview at least once a year?

1. None
2. 1 % to 24%
3. 25% to 49%
4. 50% or more

CTRNOFFPC What proportion employees been given <u>paid</u> time-off from their work to undertake training in the past 12 months?

1. Up to 24%
2. 25% to 49%
3. 50% to 74%
4. 75% or more

What proportion employees been given <u>non-paid</u> time-off from their work to undertake training in the past 12 months?

1. Up to 24%
2. 25% to 49%
3. 50% to 74%
4. 75% or more

The index of *structural learning* measures activities that aim at developing knowledge in a systematically organised way (Box 4). Employee participation in continuous improvement (B1CIRCLE) as well as regular meetings between the line managers and the workers they are responsible for (CBRFANY) contribute to a learning culture where all employees play a part in knowledge development around daily activities. Technological intelligence through quality monitoring (B2QUAL), internal and external knowledge management practices (B2KMBASE, B2KMEX), as well as customer orientation (B2CUSAT) contribute to strengthening the knowledge base of the firm.

BOX 10.4 EMPLOYER-LEVEL QUESTIONS FOR *STRUCTURAL LEARNING*

B1CIRCLE What percentage of employees at this firm currently participates in groups who meet regularly to think about improvements that could be made within this workplace? 1. Up to 24% 2. 25% to 49% 3. 50% to 74% 4. 75% or more
CBRFANY How often do you have meetings between line manager or supervisors and all the workers for whom they are responsible? 1. Every day 2. At least once a week 3. At least once a month 4. At least once a year 5. Never
B2QUAL Does this firm monitor the quality of its production processes or service delivery? 1. Yes, on a continuous basis 2. Yes, on an intermittent basis 3. No 4. Not relevant
B2KMBASE Do employees in this firm regularly up-date databases that document good work practices of lessons learned? 1. Yes 2. No 3. Not relevant
B2KMEX Do this firm monitor external ideas or technological developments for new or improved products processes or services? 1. Yes, using staff assigned specifically to this task 2. Yes, as part of the responsibilities of general staff 3. No
B2CUSAT Does this firm monitor customer satisfaction through questionnaires, focus groups, analysis of complaints, or other methods? 1. Yes, on a regular basis 2. Yes, but infrequently 3. No

Decentralisation, *individual* and *structural learning* are positively correlated with one another, suggesting that they represent complementary dimensions of a model of the learning organisation.

The three learning organisation indices are then correlated with measures of innovation from the CIS survey, with the classic distinctions between product, process, organisational and marketing innovations (Table 10.1). All coefficients are positive, and the highest correlations relate the different types of innovation with the individual learning index.

Table 10.1: Learning organisation indexes and innovation: Pearson correlation coefficients

	Mean (std)	Product innovation	Process innovation	Organisational innovation	Marketing innovation
Decentralisation	0.43 (0.23)	0.13	0.13	0.13	0.09
Individual learning	0.64 (0.33)	0.18	0.16	0.22	0.11
Structural learning	0.73 (0.17)	0.11	0.17	0.10	Ns

Data source: Swedish Meadow survey, Statistic Sweden (2011)
Note: all correlation coefficients are significant at a 1% level, ns means not significant at the 10% level.

These results are still tentative and they need more in depth analysis but they are promising and show that a Meadow survey allows capturing some important organisational features that are conducive to more innovativeness. These characteristics combine work organisation practices, human resource management and supportive technologies. Moreover, the structure of the survey that links information collected at the employer and employee level creates new opportunities to investigating economic performance as well as quality of working life issues which are key to achieve the EU2020 objectives of smart, sustainable and inclusive growth in ageing economies. Hopefully, the Meadow linked employer/employee surveys that have been, or are about to be, administered in Denmark, Norway and Finland will contribute to demonstrate the usefulness of such a survey instrument to guide evidence based policies for firms as well as for administrations and governments.

Annex 10.1 MEADOW consortium and external contributors

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REFERENCES
[Please add]

NOTES

[1] The MEADOW Guidelines are a collective effort. In addition to the core consortium members responsible for the drafting of the Guidelines, the project benefited from the assistance of a large number of external contributors. A complete list of the Consortium team members and external contributors is provided in Annex 10.1.

[2] For a downloadable version of the MEADOW Guidelines, see: http://www.meadow-project.eu/ [Could we cite the guidelines and put the URL in the reference?}

[3] For an overview of the literature on the relation between organisational structure and innovation, see Lam, (2005).

[4] The cognitive testing was coordinated by Anthony Arundel and Adriana van Cruysen from UM-MERIT in the Netherlands. For a detailed presentation of the cognitive tests, see the synthesis report in the Annex to the MEADOW Guidelines.

[5] The Swedish employer-level survey was undertaken at the initiative of Hans-Olof Hagen, Statistics Sweden. See: *Learning Organisation Matters*, Statistics Sweden (2011) http://www.scb.se/statistik/_publikationer/NR9999_2011A01_BR_NRFT1101.pdf

[6] Work on the measurement framework including the overview of major theories was coordinated by the team from the University of Aalborg, Denmark under the leadership of Peter Nielsen. See: "Multi-level theoretical framework", MEADOW background document, http://www.meadow-project.eu/index.php?option=com_remository&Itemid=56&func=fileinfo&id=18

[7] See: Grid report: State of the art in surveys of organisational change", MEADOW background document, http://www.meadow-project.eu/index.php?option=com_remository&Itemid=56&func=fileinfo&id=17

[8] There are also two sources of non-response bias in the second-stage sample. Both effects result in estimates with a higher variance. See: Ernst et al. (1989).

[9] This survey could provide the primary sampling units for a linked employer/employee survey at the European level.

[10] For a discussion of the availability of registers of employers and employees in EU member countries which might serve as sampling frames for surveys in which either the employer or employee comprises the primary sampling unit, see Chapter 7 of the Guidelines on 'Methodologies for Surveys'[Please cite the reference]. Work on survey methodologies including sampling was coordinated by John Forth from the National Institute of Economic and Social Research in the UK.

[11] For a discussion of mixed-household enterprise surveys, see OECD (2002) and Asian Development bank, 2011.

[12] Moser and Kalton (1971) refer to these dual problems. They noted that 'recall loss' or 'omission' is likely to be greater if the recall period is longer, while the telescoping effect can be greater for shorter recall periods. They identify diary methods as an approach that has been used in surveys of individuals to address the problem of recall loss. Another approach is bounded recall where the respondent is reminded of some information concerning the previous period, but in this case additional panel information is needed.

[13] However, attrition does not necessarily imply a bias. It depends on who falls out and whether their characteristics are correlated with the behaviour one wants to observe. For example, in its long labour supply and demand panels, OSA has not found that attrition has been concentrated in specific size groups or sectors. See ….

[14] Regarding the follow-up period between the waves, it is important to find a balance. It should not be too short (for example one or two years) since such regular observations are not required to measure organisational changes. Moreover, such an option would be costly and lead to practical difficulties and an extra burden for companies. However, a low frequency (for example six or eight years) is not practical either since it would probably lead to important attrition biases (one may encounter major difficulties in tracing employers, and even more so in tracing employees). It would also leave part of the time-line unobserved and the data would suffer from the obsolescence of a large fraction of the questions.

[15] The drafting of the employer questionnaire was coordinated by Amelia Román of the Institute for Labour Studies (OSA), The Netherlands. The drafting of the employee questionnaire was coordinated by Francis Green of the University of Kent in the United Kingdom. For down loadable versions of the core English questionnaires and translations into the 7 other languages represented by the MEADOW consortium, see: http://www.meadow-project.eu/index.php?option=com_content&task=view&id=25&Itemid=41

Comments FDG for Nathalie and Ned

So far, with 4 chapters read, this is the best written. Congratulations.

It could either be where it is in Part IV or in Part VI which is the more forward looking and speculative section but I will keep it where it is as it deals with the 3rd component of the Oslo definition of innovation. The reference to Oslo is OECD/Eurostat (2005).

Without references, I cannot do the review of citations referenced and references cited, but you can before I see the next version and put the references into Elgar format (see below). I have added some missing prepositions and fixed a couple of typos. My questions are in yellow. I will do the review of references when I get the next version.

Elgar prefers a limited number of endnotes. Most of yours pass the test, but could we find a reference for the MEADOW Guidelines, which can include the URL. That will make it easier to refer to the guidelines and to the sections.

Are you aware of the Statcan Workplace Employee Survey (WES)? If not, have a look at http://publications.gc.ca/Collection/Statcan/71-585-X/71-585-XIE.html and it might merit a reference, perhaps to the compendium which you will find in the URL. This was a potentially useful survey but it was not sold to the policy department – even though it was a principal funder of the survey – and when no justification could be made, based on its use in policy, it was terminated. It provides a cautionary message for this sort of work.

On page 6, you make reference to knowledge management practices and you might consider a reference to OECD (2003) which I will attach to the email that will contain this note. The publication was an outcome of a project run by CERI at OECD that Dominique Foray and I worked on. It started with an OECD High-level Forum in Ottawa in 2000 on KM, which is where I met Alice Lam.

I am pleased to see the discussion of longitudinal surveys, surveys with retrospective questions, and cross-sectional surveys. This will link to the chapter that Christian Rammer is doing on the ZEW longitudinal panel for CIS. Also the reference to the informal economy is good. That links to work that I am doing in Africa and there is a working paper on the UNU-MERIT website by Konté and Mdong on the informal economy in Senegal – if you read it, keep in mind that it comes out of a capacity building project and it is still a work in progress, but I am quite pleased with it so far.

I am now going to set you two sets of tasks. The first can take a month and that is to review what I have done to the paper, add the references, ensure it is internally consistent and send it back to me. I will be reading it again when the book gets closer to submission and I will have at least one other reader review the chapter. The second is administrative and it would be good to have the contract and the IP permission, if needed, back in a week or so. Decide which of you is the author responsible for admin and only that person need sign the contract. Then, mail it to me at UNU-MERIT, or scan and send it by PDF. As for IP, so long as you feel that everything in the paper is in the public domain, you do not need it, but if you are taking material from the collective, you may wish to get an email or emails of permission to reproduce it and then send them to me. The contract will be attached, as will the Elgar guide for contributors.

Ignore most of the guide, except for the reference format and you can also use the reference section in my book as a set of examples. It can be found at:
http://www.idrc.ca/EN/Resources/Publications/Pages/IDRCBookDetails.aspx?PublicationID=45

Finally, I think this is going to be a good book if we do not weaken. Thank you both for contributing.

Fred.